

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Approved for use through 04/30/2003. OMB 0651-0031  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE  
to a collection of information unless it contains a valid OMB control number.

Substitute for form 1445PTB

# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

*(Use as many sheets as necessary)*

## Sheet

of 1

Complete if Known

Application Number	10/618,645
Filing Date	15 July 2003
First Named Inventor	John G. Leishman, et al.
Art Unit	3745
Examiner Name	-
Attorney Docket Number	MR2833-27

## U. S. PATENT DOCUMENTS

## FOREIGN PATENT DOCUMENTS

Examiner  
Signature

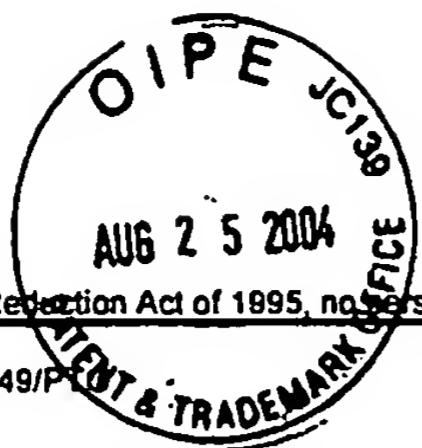
Date Considered

11/15/04

<sup>1</sup>EXAMINER: Initial in reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>2</sup> Applicant's unique citation designation number (optional). <sup>3</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 801.04. <sup>4</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>5</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>6</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>7</sup> Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Approved for use through 04/30/2003. GMB 0851-0031  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE  
to a collection of information unless it contains a valid GMB control number.

PTO/SB/08A (04-03)

Substitute for form 1449/P-17

# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

**(Use as many sheets as necessary)**

Sheet 1 of 1

**Complete if Known**

Application Number	10/618,645
Filing Date	15 JULY 2003
First Named Inventor	John G. Leishman, et al.
Art Unit	3745
Examiner Name	-
Attorney Docket Number	MR

Examiner Signature		Date Considered	11/15/04
--------------------	--------------------------------------------------------------------------------------	-----------------	----------

Translation is attached.  
This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

Complete if Known

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use as many sheets as necessary)

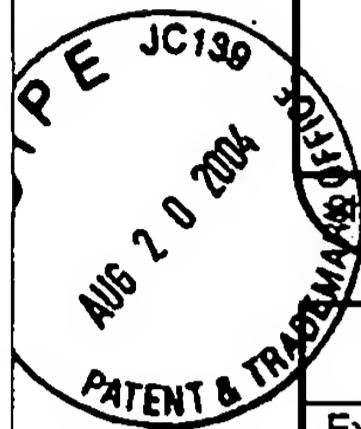
Sheet

1

of

4

Application Number	10/618,645
Filing Date	15 JULY 2003
First Named Inventor	JOHN G. LEISHMAN
Art Unit	3745
Examiner Name	UNKNOWN
Attorney Docket Number	MR2833-27



## NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
JK	AA	Leishman, J.G., and Bagai, A., "Challenges in Understanding the Vortex Dynamics of Helicopter Rotor Wakes," AIAA Journal, Vol. 36, No. 7, July 1998, pp. 1130-1140.	
	AB	Leishman, J.G., Principles of Helicopter Aerodynamics, Cambridge University Press, 2000, Chapter 10.	
	AC	Schmitz, F.H., "Rotor Noise," Chapter 2, Aeroacoustics of Flight Vehicles: Theory and Practice, Vol. 1, NASA Reference Publication 1258, Aug. 1991.	
	AD	Berry, J.D., and Mineck, R.E., "Wind Tunnel Test for an Articulated Helicopter Rotor Model with Several Tip Shapes," NASA-TM-80080, December, 1980.	
	AE	Martin, P.B. and Leishman, J.G., "Trailing Vortex Measurements in the Wake of a Hovering Rotor Blade with Various Tip Shapes," Proceedings of the 58th Annual Forum of the	
	AF	Tangler, J.L., "Experimental Investigation of the Sub-wing Tip and Its Vortex Structure," NASA CR-3058, 1978.	
	AG	Marchman, J.F. III, and Uzel, J.N., "Effect of Several Wing Tip Modifications on a Trailing Vortex," Journal of Aircraft, Vol. 9, No. 9, 1972, pp. 684-686.	
	AH	McAlister, K.W., Tung, C., and Heineck, J.T., "Devices that Alter the Tip Vortex of a Rotor," NASA/TM-2001-209625 (AFDD/TR-01-A-003), 2001.	
	AI	Kantha, H.L., Lewellen, W.S., and Durgin, F.H., "Response of a Trailing Vortex to Axial Injection into the Core," Journal of Aircraft, Vol. 9, No. 3, 1972, pp. 254-256.	
W	AJ	Liu, Z., Russel, J.W. and Sankar, L.N., "A study of Rotor Tip Structure Alteration Technique," Journal of Aircraft, Vol. 38, No. 3, 2001, pp. 473- 477.	

Examiner Signature		Date Considered	15/04
--------------------	--	-----------------	-------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

Complete If Known

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet

2 of 4

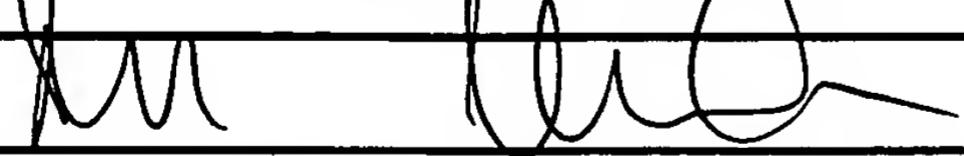
Application Number	10/618,645
Filing Date	15 JULY 2003
First Named Inventor	JOHN G. LEISHMAN
Art Unit	3745
Examiner Name	UNKNOWN

Attorney Docket Number

MR2833-27

## NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
✓	AK	Han, Y.O., and Bae, H., "Modification of the Tip Vortex by Span-wise Slots," KSAS Korean Journal, Vol. 27, No. 5, 1998, pp. 1-7.	✓
	AL	Han, Y.O., and Chung, W.J., "Mean and Turbulent Characteristics of Tip Vortices Generated by a Slotted Model Blade," Proceedings of 5th Engineering Turbulence Modeling	✓
	AM	Martin, P.B., Bhagwat, M.J., and Leishman, J.G., "Strobed Laser-Sheet Visualization of a Helicopter Rotor Wake," 2nd Pacific Symposium on Flow Visualization and Image Pro	
	AN	Bhagwat, M.J., and Leishman, J.G., "Stability Analysis of Rotor Wakes in Axial Flight," Journal of the American Helicopter Society, Vol. 45, No. 3, 2000, pp. 165-178.	
	AO	Leishman, J.G., "Seed Particle Dynamics in Tip Vortex Flow," Journal of Aircraft, Vol. 33, No. 4, 1996, pp. 823-825.	
	AP	Martin, P.B., Pugliese, G.J., and Leishman, J.G., "Laser Doppler Velocimetry Uncertainty Analysis For Rotor Blade Tip Vortex Measurements," AIAA CP 2000-0263, 38th Ae	
	AQ	Barrett, R.V., and Swales, C., "Realisation of the Full Potential of the Laser Doppler Anemometer in the Analysis of Complex Flows," Aeronautical Journal, Vol. 102, No. 1	
	AR	Tung, C., Caradonna, F.X., and Morse, H.A., "The Structure of Trailing Vortices Generated by Model Rotor Blades," Vertica, Vol. 7, 1983, pp. 33- 43.	
	AS	Tennekes, H, and Lumley, J.L., A First Course in Turbulence, MIT Press, 1972.	
✓	AT	Vatistas, G.H., Kozel, V., and Mih, W.C., "Simpler Model for Concentrated Vortices," Experiments in Fluids, Vol. 24, No. 11, 1991, pp. 73-76.	

Examiner Signature		Date Considered	11 / 15 / 04
--------------------	--------------------------------------------------------------------------------------	-----------------	--------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

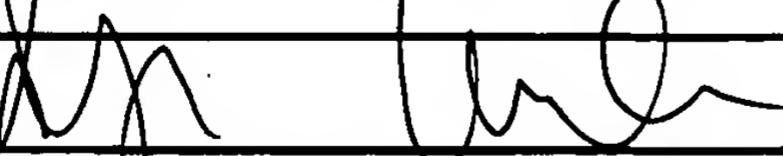
1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(Use as many sheets as necessary)</i>				<b>Complete if Known</b>	
				Application Number	10/618,645
				Filing Date	15 JULY 2003
				First Named Inventor	JOHN G. LEISHMAN
				Art Unit	3745
				Examiner Name	UNKNOWN
Sheet	3	of	4	Attorney Docket Number	
MR2833-27					

NON PATENT LITERATURE DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.				T <sup>2</sup>
I K	AU	Lamb, H., Hydrodynamics, 6th Ed. Cambridge University Press, Cambridge, UK, 1932.				
	AV	Oseen, C.W., "Uber Wirbelbewegung in Einer Reiben den Flussigkeit," Ark. J. Mat. Astrom. Fys., Vol. 7, 1912, pp. 14-21.				
	AW	Bhagwat, M.J., and Leishman, J.G., "Viscous Vortex Core Models for Free-Vortex Wake Calculations," Proceedings of the 58th Annual Forum of the American Helicopter Society				
	AX	Bhagwat, M.J., and Leishman, J.G., "Correlation of Helicopter Rotor Tip Vortex Measurements," AIAA Journal, Vol. 38, No. 2, 2000, pp. 301-308.				
	AY	Squire, H.B., "The Growth of a Vortex in Turbulent Flow," The Aeronautical Quarterly, August 1965, pp. 302-305.				
	AZ	Cotel, A.J., and Breidenthal, R.E., "Turbulence Inside a Vortex," Physics of Fluids, Vol. 11, No. 10, 1999, pp. 3026-3029.				
	BA	Bradshaw, P., "The analogy Between Streamline Curvature and Bouyancy in Turbulent Shear Flows," Journal of Fluid Mechanics, Vol. 36, Part 1, pp. 177-191.				
	BB	Iverson, J.D., "Correlation of Turbulent Trailing Vortex Decay Data," Journal of Aircraft, Vol. 13, No. 3, 1976, pp. 338-342.				
	BC	Devenport, W.J., Rife, M.C., Liapis, S.I., and Follin, G.J., "The Structure and Development of a Wing-Tip Vortex," Journal of Fluid Mechanics, Vol. 312, 1996, pp. 67-106.				
D	BD	Leishman, J.G., "Measurements of the Aperiodic Wake of a hovering Rotor," Experiments in Fluids, Vol. 25, 1998, pp. 352-361.				

Examiner Signature				Date Considered	11/15/04
--------------------	--------------------------------------------------------------------------------------	--	--	-----------------	----------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

**Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.**

<p>Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.</p> <p>Substitute for form 1449/PTO</p> <p><b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b></p> <p><i>(Use as many sheets as necessary)</i></p>		<b>Complete if Known</b>	
		<b>Application Number</b>	10/618,645
		<b>Filing Date</b>	15 JULY 2003
		<b>First Named Inventor</b>	JOHN G. LEISHMAN
		<b>Art Unit</b>	3745
		<b>Examiner Name</b>	UNKNOWN
Sheet	4	of	4
		<b>Attorney Docket Number</b>	
		MR2833-27	

## **NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
JL	BE	Gursul, I., and Xie, W., "Origin of Vortex Wandering Over Delta Wings," Journal of Aircraft, Vol. 37, No. 2, 1999, pp. 348-350.	

Examiner Signature  Date Considered 11/15/04

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

**1** Applicant's unique citation designation number (optional). **2** Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO:  
**Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

*If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.*